configured in accordance with the specification and the Claims, and therefore, Figures 1-2 are not Prior Art. In other words, Applicant respectfully submits that although Figures 1 and 2 may not appear novel on their face, when Figures 1 and 2 are examined in light of the specification and the other figures, it is clear that the CT imaging system illustrated in Figures 1 and 2 is configured in a novel manner and, as such, should not be labeled Prior Art. For at least the reasons above, Applicant respectfully requests that the objection to the drawings be withdrawn.

The rejection of Claims 1-20 under 35 U.S.C. § 102(e) as being anticipated by Hu et al. (U.S. Pat. No. 6,370,217) is respectfully traversed.

Hu et al. describe a Computed Tomographic (CT) imaging system (10) configured to generate a volumetric image of a heart. The imaging system includes a circuit (100) that identifies the physiological cycle of the heart. In use, the operator selects at least one phase of the heart to be imaged using the physiological signal, such as diastole or systole. During each rotation of an x-ray source (16), a segment of projection data is collected at a different radial angle, or projection angle, for each selected phase. After collecting the projection data, the segments are combined into a projection dataset. A reconstruction algorithm then generates a volumetric image of each selected phase of the heart. More specifically, the multi-phase cardiac imaging mode operates similar to the single phase cardiac imaging mode with the exception that a plurality of separate images are generated for a plurality of phases of the heart.

Applicant respectively submits that the pending claims are patentably distinguishable over Hu et al. Specifically, Claim 1 recites a method for imaging a desired coronary artery or desired portion thereof utilizing a computed tomography (CT) imaging system including a rotating gantry, a detector array on the rotating gantry, and a radiation source on the rotating gantry configured to project a beam of radiation towards the detector array through a patient's heart. The method includes "scanning a volume of the patient's heart with the CT imaging system to acquire projection data, the volume including at least a first desired coronary artery branch segment and a second desired coronary artery branch segment, and the acquired projection data including a first projection dataset representing the first desired coronary artery

branch segment acquired during a first desired cardiac phase of a plurality of cardiac cycles of the patient and a second projection dataset representing the second desired coronary artery branch segment acquired during a second desired cardiac phase of a plurality of cardiac cycles of the patient; selecting the first cardiac phase corresponding to a low motion period of the first desired coronary artery branch segment of a patient's heart and selecting the second cardiac phase corresponding to a low motion period of the second desired coronary artery branch segment of a patient's heart; reconstructing a first 2D image of the first desired coronary artery branch segment utilizing the first projection dataset acquired during the first desired cardiac phase of a plurality of cardiac cycles to reduce motion artifacts of the first desired coronary artery branch segment; reconstructing a second 2D image of the second desired coronary artery branch segment utilizing the second projection dataset acquired during the second desired cardiac phase of a plurality of cardiac cycles to reduce motion artifacts of the second desired coronary artery branch segment; reconstructing at least one 3D image of the coronary artery utilizing the first 2D image and the second 2D image.

Hu et al. do not describe nor suggest the method recited in Claim 1. Specifically, Hu et al. do not describe nor suggest reconstructing a first 2D image of a first desired coronary artery branch segment utilizing the first projection dataset acquired during the first desired cardiac phase, reconstructing a second 2D image of a second desired coronary artery branch segment utilizing the second projection dataset acquired during the second desired cardiac phase, and reconstructing at least one 3D image of the coronary artery utilizing the first 2D image and the second 2D image. Rather, in contrast to the present invention, Hu et al. describe a reconstruction algorithm that generates a volumetric image of each selected phase of the heart, such that a separate image must be generated for each selected cardiac phase of the heart.

Applicant respectfully traverses the assertion in the Office Action that Hu et al. describe reconstructing at least one 3D image of the coronary artery utilizing the first 2D image and the second 2D image. Rather, and in contrast to the present invention, Hu et al. describe that the reconstruction algorithm is configured to generate either a cross-sectional image, or a volumetric

image, of a heart. Therefore, Applicant respectfully submits that Claim 1 is patentable over Hu et al.

Claims 2-3 depend directly from independent Claim 1. When the recitations of Claims 2-3 are considered in combination with the recitations of Claim 1, Applicant respectfully submits that dependent Claims 2-3 likewise are patentable over Hu et al.

Claim 4 recites a computed tomography (CT) imaging system having a rotating gantry, a detector array on said rotating gantry, and a radiation source on said rotating gantry configured to project a beam of radiation towards said detector array through a patient's heart. The system is configured to "scan a volume of a patient's heart to acquire projection data, the volume including at least a first desired coronary artery branch segment and a second desired coronary artery branch segment, said acquired projection data including a first projection dataset representing said first desired coronary artery branch segment acquired during a first desired cardiac phase of a plurality of cardiac cycles of the patient and said second projection dataset representing a second desired coronary artery branch segment acquired during the second desired cardiac phase of a plurality of cardiac cycles of the patient; utilize a data compilation of low motion cardiac phases and corresponding coronary artery branch segments to select the first cardiac phase corresponding to the desired first coronary artery branch segment; utilize a data compilation of low motion cardiac phases and corresponding coronary artery branch segments to select the second cardiac phase corresponding to the desired second coronary artery branch segment; reconstruct a first 2D image of said first desired coronary artery branch segment utilizing said first projection dataset acquired during the first desired cardiac phase of a plurality of cardiac cycles to reduce motion artifacts of the first desired coronary artery branch segment; reconstruct a second 2D image of said second desired coronary artery branch segment utilizing said second projection dataset acquired during the second desired cardiac phase of a plurality of cardiac cycles to reduce motion artifacts of the second desired coronary artery branch segment; and reconstruct at least one 3D image of the coronary artery utilizing the first 2D image and the second 2D image.

Hu et al. do not describe nor suggest the method recited in Claim 4. Specifically, Hu et al. do not describe nor suggest a system configured to reconstruct a first 2D image of a first desired coronary artery branch segment utilizing the first projection dataset acquired during the first desired cardiac phase, reconstruct a second 2D image of a second desired coronary artery branch segment utilizing the second projection dataset acquired during the second desired cardiac phase, and reconstruct at least one 3D image of the coronary artery utilizing the first 2D image and the second 2D image. Rather, and in contrast to the present invention, Hu et al. describe a reconstruction algorithm that generates a volumetric image of each selected phase of the heart, such that a separate image must be generated for each selected cardiac phase of the heart. Therefore, Applicant respectfully submits that Claim 4 is patentable over Hu et al.

Claims 5-7 depend, either directly or indirectly, from independent Claim 4. When the recitations of Claims 5-7 are considered in combination with the recitations of Claim 4, Applicant respectfully submits that dependent Claims 5-7 likewise are patentable over Hu et al.

Claim 8 recites a computed tomographic (CT) imaging for acquiring views of an object, wherein the CT system includes a rotating gantry, a detector array on the rotating gantry, at least one radiation source on the rotating gantry, and a computer coupled to the detector array and the radiation source. The computer is configured to "scan a volume of the patient's heart to acquire projection data, the volume including at least a first desired coronary artery branch segment and a second different desired coronary artery branch segment, the acquired projection data including a first projection dataset representing the first desired coronary artery branch segment acquired during a first desired cardiac phase of a plurality of cardiac cycles of the patient and a second projection dataset representing the second desired coronary artery branch segment acquired during a second desired cardiac phase of a plurality of cardiac cycles of the patient; select the first cardiac phase corresponding to a low motion period of the first desired coronary artery branch segment of the patient's heart and select the second cardiac phase corresponding to a low motion period of the second desired coronary artery branch segment of the patient's heart; reconstruct a first 2D image of the first desired coronary artery branch segment utilizing the first

projection dataset acquired during the first desired cardiac phase of a plurality of cardiac cycles to reduce motion artifacts of the first desired coronary artery branch segment; reconstruct a second 2D image of the second desired coronary artery branch segment utilizing the second projection dataset acquired during the second desired cardiac phase of a plurality of cardiac cycles to reduce motion artifacts of the second desired coronary artery branch segment; and reconstruct at least one 3D image of the coronary artery utilizing the first 2D image and the second 2D image."

Hu et al. do not describe nor suggest the imaging system recited in Claim 8. Specifically, Hu et al. do not describe nor suggest an imaging system including a computer configured to reconstruct a first 2D image of a first desired coronary artery branch segment utilizing the first projection dataset acquired during the first desired cardiac phase, reconstruct a second 2D image of a second desired coronary artery branch segment utilizing the second projection dataset acquired during the second desired cardiac phase, and reconstruct at least one 3D image of the coronary artery utilizing the first 2D image and the second 2D image. Rather, and in contrast to the present invention, Hu et al. describe a reconstruction algorithm that generates a volumetric image of each selected phase of the heart, such that a separate image must be generated for each selected cardiac phase of the heart. Therefore, Applicant respectfully submits that Claim 8 is patentable over Hu et al.

Claims 9-10 depend directly from independent Claim 8. When the recitations of Claims 9-10 are considered in combination with the recitations of Claim 8, Applicant respectfully submits that dependent Claims 9-10 likewise are patentable over Hu et al.

Claim 11 recites a computer system configured to "utilize a data compilation of low motion cardiac phases and corresponding coronary artery branch segments to select a first cardiac phase corresponding to a desired first coronary artery branch segment; utilize a data compilation of low motion cardiac phases and corresponding coronary artery branch segments to select a second cardiac phase corresponding to a desired second coronary artery branch segment; read projection data acquired by a computed tomographic (CT) imaging system during a scan of

a volume of a patient's heart, the volume including at least the first desired coronary artery branch segment and the second coronary artery branch segment, the acquired projection data including the first projection dataset and the second projection dataset; and reconstruct a first 2D image of the first desired coronary artery branch segment utilizing the first projection dataset acquired during the first desired cardiac phase of a plurality of cardiac cycles to reduce motion artifacts of the first desired coronary artery branch segment; reconstruct a second 2D image of the second desired coronary artery branch segment utilizing the second projection dataset acquired during the second desired cardiac phase of a plurality of cardiac cycles to reduce motion artifacts of the second desired coronary artery branch segment; and reconstruct at least one 3D image of the coronary artery utilizing the first 2D image and the second 2D image."

Hu et al. do not describe nor suggest the computer recited in Claim 11. Specifically, Hu et al. do not describe nor suggest a computer configured to reconstruct a first 2D image of a first desired coronary artery branch segment utilizing the first projection dataset acquired during the first desired cardiac phase, reconstruct a second 2D image of a second desired coronary artery branch segment utilizing the second projection dataset acquired during the second desired cardiac phase, and reconstruct at least one 3D image of the coronary artery utilizing the first 2D image and the second 2D image. Rather, and in contrast to the present invention, Hu et al. describe a reconstruction algorithm that generates a volumetric image of each selected phase of the heart, such that a separate image must be generated for each selected cardiac phase of the heart. Therefore, Applicant respectfully submits that Claim 11 is patentable over Hu et al.

Claims 12-14 depend, either directly or indirectly, from independent Claim 11. When the recitations of Claims 12-14 are considered in combination with the recitations of Claim 11, Applicant respectfully submits that dependent Claims 12-14 likewise are patentable over Hu et al.

Claim 15 recites a computer system configured to "scan a volume of the patient's heart to acquire projection data, the volume including at least a first desired coronary artery branch segment and a second desired coronary artery branch segment, the acquired projection data

including a first projection dataset representing the first desired coronary artery branch segment acquired during a first desired cardiac phase of a plurality of cardiac cycles of the patient and the second projection dataset representing the second desired coronary artery branch segment acquired during a second desired cardiac phase of a plurality of cardiac cycles of the patient; select the first cardiac phase corresponding to a low motion period of the first desired coronary artery branch segment of the patient's heart and select the second cardiac phase corresponding to a low motion period of the second desired coronary artery branch segment of the patient's heart; reconstruct a first 2D image of the first desired coronary artery branch segment utilizing the first projection dataset acquired during the first desired cardiac phase of a plurality of cardiac cycles to reduce motion artifacts of the first desired coronary artery branch segment; reconstruct a second 2D image of the second desired coronary artery branch segment utilizing the second projection dataset acquired during the second desired cardiac phase of a plurality of cardiac cycles to reduce motion artifacts of the second desired coronary artery branch segment; and reconstruct at least one 3D image of the coronary artery utilizing the first 2D image and the second 2D image."

Hu et al. do not describe nor suggest the computer recited in Claim 15. Specifically, Hu et al. do not describe nor suggest a computer configured to reconstruct a first 2D image of a first desired coronary artery branch segment utilizing the first projection dataset acquired during the first desired cardiac phase, reconstruct a second 2D image of a second desired coronary artery branch segment utilizing the second projection dataset acquired during the second desired cardiac phase, and reconstruct at least one 3D image of the coronary artery utilizing the first 2D image and the second 2D image. Rather, and in contrast to the present invention, Hu et al. describe a reconstruction algorithm that generates a volumetric image of each selected phase of the heart, such that a separate image must be generated for each selected cardiac phase of the heart. Therefore, Applicant respectfully submits that Claim 15 is patentable over Hu et al.

Claims 16-17 depend, either directly or indirectly, from independent Claim 15. When the recitations of Claims 16-17 are considered in combination with the recitations of Claim 15,

Applicant respectfully submits that dependent Claims 16-17 likewise are patentable over Hu et al.

Claim 18 recites a machine readable medium having instructions recorded thereon configured to instruct a computer to "scan a volume of the patient's heart to acquire projection data, the volume including at least a first desired coronary artery branch segment and a second desired coronary artery branch segment, said acquired projection data including a first projection dataset representing the first desired coronary artery branch segment acquired during the first desired cardiac phase of a plurality of cardiac cycles of the patient and said second projection dataset representing the second desired coronary artery branch segment acquired during the second desired cardiac phase of a plurality of cardiac cycles of the patient; select a first cardiac phase corresponding to a low motion period of the first desired coronary artery branch segment of the patient's heart and a different, second cardiac phase corresponding to the second, different desired coronary artery branch segment of the patient's heart; reconstruct a first 2D image of the first desired coronary artery branch segment utilizing the first projection dataset acquired during the first desired cardiac phase of a plurality of cardiac cycles to reduce motion artifacts of the first desired coronary artery branch segment; reconstruct a second 2D image of the second desired coronary artery branch segment utilizing the second projection dataset acquired during the second desired cardiac phase of a plurality of cardiac cycles to reduce motion artifacts of the second desired coronary artery branch segment; and reconstruct at least one 3D image of the coronary artery utilizing the first 2D image and the second 2D image."

Hu et al. do not describe nor suggest the machine readable medium recited in Claim 18. Specifically, Hu et al. do not describe nor suggest a machine readable medium configured to instruct a computer to reconstruct a first 2D image of a first desired coronary artery branch segment utilizing the first projection dataset acquired during the first desired cardiac phase, reconstruct a second 2D image of a second desired coronary artery branch segment utilizing the second projection dataset acquired during the second desired cardiac phase, and reconstruct at least one 3D image of the coronary artery utilizing the first 2D image and the second 2D image.

Rather, and in contrast to the present invention, Hu et al. describe a reconstruction algorithm that generates a volumetric image of each selected phase of the heart, such that a separate image must be generated for each selected cardiac phase of the heart. Therefore, Applicant respectfully submits that Claim 18 is patentable over Hu et al.

Claims 19-20 depend, either directly or indirectly, from independent Claim 18. When the recitations of Claims 19-20 are considered in combination with the recitations of Claim 18, Applicant respectfully submits that dependent Claims 19-20 likewise are patentable over Hu et al.

For the reasons set forth above, Applicant respectfully requests that the Section 102 rejections of Claims 1-20 be withdrawn.

In view of the foregoing amendments and remarks, all the claims now active in this application are believed to be in condition for allowance. Reconsideration and favorable action is respectfully solicited.

Respectfully Submitted,

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